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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Gilad Lerman

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EXAMINER

NEGIN, RUSSELL SCOTT

ART UNIT

PAPER NUMBER

1631

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/579,811	Applicant(s) LERMAN ET AL.	
	Examiner RUSSELL S. NEGIN	Art Unit 1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,25-27,37-43 and 45-64 is/are pending in the application.
- 4a) Of the above claim(s) 40-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,25-27,37-39, 43 and 45-64 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Comments

Applicant's amendments and request for reconsideration in the communication filed on 10 May 2010 are acknowledged and the amendments are entered.

Claims 40-42 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10 December 2008.

Claims 1-3, 25-27, 37-43, and 45-64 are pending in the instant application.

Claims 1-3, 25-27, 37-39, 43, and 45-64 are examined in this Office action.

Withdrawn Rejections

The rejections of claims 1-8, 12-20, 24, 37-39, and 43 under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter are withdrawn in view of amendments filed to the instant set of claims on 10 May 2010..

The rejections of claims 4-8, 12, 16-20, 24, 28-32, and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention are withdrawn in view of cancellation of claims 4-8, 12, 16-20, 24, 28-32, and 36.

ALL of the prior art rejections are withdrawn in view of amendments filed to the instant set of claims on 10 May 2010.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The following rejection is newly applied:

Claims 25-27, 45, and 55-62 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 25-27, 45, and 55-62 are drawn to a storage medium which includes a software arrangement to be executed by a hardware processing arrangement for determining statistically outlying data points.

It is noted that page 13, lines 15-17 of the specification teaches that the storage media for the program encompasses transitory subject matter such as a carrier signal. Consequently, even though the storage media comprises software that is executed on hardware, since the storage media encompasses volatile storage media, this storage media includes carrier waves, which per se, are not statutory.

Applicant is encouraged to refer to Volume 1351, page 212 of the Official Gazette of the USPTO for further guidance on subject matter eligibility of computer readable media (publicly available on 2/23/2010). It is noted that this 35 U.S.C. 101 rejection is made based in part on this recent OG notice.

Response to arguments:

This is a newly applied rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following rejection is necessitated by amendment:

Claims 1-3, 25-27, 37-39, 43, and 45-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Delenstarr et al. [Proceedings of the SPIE, 2001, volume 4266, pages 120-131] as evidenced by Z-score [The Concise Corsini Encyclopedia of Psychology and Behavioral Science, 2004] in view of Lincoln et al. [WO 99/49403; published 30 September 1999].

Independent claim 1 is drawn to a process for determining statistically-outlying data points in at least one dataset. The method comprises receiving the at least one dataset. The method additionally comprises determining at least one interval associated with the dataset. The method additionally comprises using a hardware processing arrangement (comprising a processor) for determining a plurality of subintervals of the at least one interval by repeatedly dividing the interval until at least one predetermined criteria is met. The method additionally comprises determining the statistically-outlying data points present in the at least one dataset based on information related to the sub-intervals, wherein each particular data point of the statistically outlying data points is both associated with a particular subinterval and determined as a function of a length of this subinterval.

Independent claim 25 is drawn to similar subject matter as claim 1 except it is drawn to a storage medium comprising software that executes similar limitations on computer hardware.

Independent claim 37 is drawn to similar subject matter as claim 1 except it is drawn to a system for determining statistically-outlying data points comprising using a processor.

The article of Delenstarr et al. studies estimation of the confidence limits of oligonucleotide array-based measurements of differential expression [title]. Specifically, the objective of Delenstarr et al. is to analyze error in the form of outlying data as a result of differential expression of mRNAs in two samples. Figure 1 on page 125 of Delenstarr et al. illustrates the receiving of at least one dataset. The abscissa axes of

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Figure 1b of Delenstarr et al. illustrate the intervals associated with each of the red and green channels. This interval is broken down into subintervals in the form of widths of histogram bars. In other words, the intervals of Figure 1b of Delenstarr et al. are divided into subintervals until the criterion of the entire histogram being displayed with the bars of the given width is met. The data within the histograms are considered to be outlying data if the histogram bar is more than two standard deviations away on either side on the mean [last full paragraph of page 121 of Delenstarr et al.]. Consequently, in determining whether a histogram bar corresponds to an outlier, the data point is associated with the subinterval that encompasses it, which, in turn, is determined as a function of length from the mean (in this instance, length is the number of standard deviations from the mean).

While Delenstarr et al. teaches the software to analyze images [paragraph bridging pages 120-121 of Delenstarr et al.], Delenstarr et al. does not teach all of the computer limitations of the instantly rejected claims.

The document of Lincoln et al. studies a system and method of analyzing biomolecular sequences by placing them into bins wherein each bin corresponds to a consensus sequence of the biopolymer. Figure 19 of Lincoln et al. is an example of this fitting of polymer data into bins. Furthermore, Figure 4B of Lincoln et al. illustrates the computer media and computer hardware components for binning the polymeric data.

With regard to claims 2 and 26, the two plots in Figure 1b of Delenstarr et al. are as a result of either using green or red channels (two conditions).

With regard to claims 3 and 27, the green and red in the plots of Figure 1b of Delenstarr et al. reflect a mutational process of using the different labels (i.e. Cy3-CTP vs. Cy5-CTP) discussed in the paragraph bridging pages 120-121 of Delenstarr et al.

With regard to claim 38, Figure 4B of Lincoln et al. illustrates a hardware processing arrangement comprising a processor. With regard to claim 39, the plurality of signals in Figure 1b of Delenstarr et al. are the red and green signals indicative of gene expression converted into two datasets.

With regard to claim 43 and 45-46, Figure 1b of Delenstarr et al. illustrates the statistically outlying points in a user readable format. Figure 4B of Lincoln et al. illustrates the storage of binned data in a user-accessible format.

With regard to claims 47-48 and 55-56, the predetermined criteria for the portion of the dataset being contained in an outlying subinterval is if the portion of the dataset in the subinterval is at least two standard deviations from the mean (Figure 1b of Delenstarr et al.). As the Z-score reference teaches, data greater than two standard deviations from the mean form a fixed ratio/percentage of the entire dataset.

With regard to claims 49 and 57, Figure 1a of Delenstarr et al. teaches the raw data in the form of a dyadic grid that are processed into the histogram of Figure 1b of Delenstarr et al.

With regard to claims 50-54 and 58-64, the determination of outliers in Figure 1b of Delenstarr et al. is based on whether the subinterval is greater than two standard deviations from the mean on the principal (abscissa) axis. Consequently, the portion of data that is greater than two standard deviations in length from the mean is considered to be outlying data. It is noted that this measure of two standard deviations is not only a length, but it is also (as defined in Z-score) a ratio of a number of outliers to a number of normal points such that for a fixed number of points within two standard deviations from means, there are a deducible number of outlying points. It is also noted that each of the bars in the histogram has a height that is a function of length/position on the abscissa.

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to modify the estimation of outlying biological data in gene expression in Delenstarr et al. by use of the computer hardware of Lincoln et al. wherein the motivation would have been that automation of the procedure of deducing outlying points expedites and increases the efficiency of processing [Figure 4B of Lincoln et al.]. There would have been a reasonable expectation of success in combining Delenstarr et al. with Lincoln et al. because both studies analogously apply to analyzing biological data that is binned.

Response to Arguments

Applicant's arguments with respect to claims 1-3, 25-27, 37-39, 43, and 45-64 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

No claim is allowed.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the central PTO Fax Center. The faxing of such pages must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CFR § 1.6(d)). The Central PTO Fax Center Number is (571) 273-8300.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russell Negin, whose telephone number is (571) 272-1083. The examiner can normally be reached on Monday-Friday from 8:30 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Marjorie Moran, Supervisory Patent Examiner, can be reached at (571) 272-0720.

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Information regarding the status of the application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information on the PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/RUSSELL S. NEGIN/
Examiner, Art Unit 1631
3 September 2010